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10/088,407	03/19/2002	Stefan Grutke	50728	2960

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1350 CONNECTICUT AVENUE, N.W.  
WASHINGTON, DC 20036

EXAMINER

WYROZEBSKI LEE, KATARZYNA I

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 10/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/088,407

Applicant(s)

GRUTKE ET AL.

Examiner

Katarzyna Wyrozebski

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

In view of the applicant's request for continuing prosecution, following office action is rendered non-final. The amendments to the claims do not overcome the prior art of record since the amounts of the components are also taught and disclosed by the prior art of record. The rejections of record are incorporated here by reference.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4, 7, 8, 10-13 are rejected under 35 U.S.C. 102(e) as being anticipated by TOPOLKARAEV (US 6,492,452).

The prior art of TOPOLKARAEV discloses composition comprising organically modified clay and degradable polymer.

The selection of the degradable polymer of TOPOLKARAEV is based on consideration of variables such as solubility in water, molecular weight, melt processing and the like (col. 5,

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lines 38-41). The polymers of the prior art of TOPOLARA EV include polyesters and copolyesters (col. 6, line 64; col. 7, lines 12-14).

The clay component of the prior art of TOPOLKARA EV includes smectite-layered silicates such as montmorillonite and which clays are organically modified (col. 9, lines 19-23, 40-45). The cation exchange of montmorillonite clay, which is its property, is approximately 95 meq/100g. The amount of clay in the composition of TOPOLKARA EV is in a range of 5-60 wt % (col. 10, lines 55-60). Therefore the amount of the polymer would be the remaining balance of 40-95 wt%.

The component that is used to modify clay of TOPOLKARA EV is quaternary alkyl ammonium salt (col. 10, lines 8-24).

In the process of making composition of TOPOLKAREV, the polymer is melted in order to obtain homogeneous mixture. The unmodified phyllosilicate of TOPOLKARA EV are disclosed to have basal spacing of 12.51 angstroms and is measured using X-ray (col. 12, lines 52-54). Intercalation with organic ammonium and then with polymer increases basal spacing of the clay platelets eventually exfoliates, which is further shown by lack of d-peak in XRD spectra. (col. 10, line 67 – col. 10, line 5).

The composition of the prior art of TOPOLKARA EV is utilized in making disposable articles, temporary coatings and barriers, films and fibers (ABSTRACT).

Additional components in the prior art of TOPOLKARA EV include calcium carbonate, titanium dioxide, talc, kaolin clay and the like (col. 9, lines 49-55), water repellent additives in amount of 1.5 wt % (col. 17, line 36-38). The specification further teaches use of water repellent additives in amount of 0.5-10 wt % (col. 8, lines 10-15). Calcium carbonate and talc can be

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utilized as nucleating agents in amounts of 0.05-50 wt % (col. 2, lines 26-30). Calcium carbonate in examples is SUPERMITE (col. 10, lines 39-41).

In the light of the above disclosure, the prior art of TOPOLKARAEV anticipated requirements of claims rejected above.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

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evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-4, 7, 8, 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over TOPOLKARAEV (US 6,492,452).

The prior art of TOPOLKARAEV discloses composition comprising organically modified clay and degradable polymer.

The selection of the degradable polymer of TOPOLKARAEV is based on consideration of variables such as solubility in water, molecular weight, melt processing and the like (col. 5, lines 38-41). The polymers of the prior art of TOPOLARAEV include polyesters and copolyesters (col. 6, line 64; col. 7, lines 12-14).

The clay component of the prior art of TOPOLKARAEV includes smectite-layered silicates such as montmorillonite and which clays are organically modified (col. 9, lines 19-23, 40-45). The cation exchange of montmorillonite clay, which is its property, is approximately 95 meq/100g. The amount of clay in the composition of TOPOLKARAEV is in a range of 5-60 wt % (col. 10, lines 55-60). Therefore the amount of the polymer would be the remaining balance of 40-95 wt%.

The component that is used to modify clay of TOPOLKARAEV is quaternary alkyl ammonium salt (col. 10, lines 8-24).

In the process of making composition of TOPOLKAREV, the polymer is melted in order to obtain homogeneous mixture. The unmodified phyllosilicate of TOPOLKAREV are disclosed to have basal spacing of 12.51 angstroms and is measured using X-ray (col. 12, lines 52-54). Intercalation with organic ammonium and then with polymer increases basal spacing of the clay platelets eventually exfoliates, which is further shown by lack of d-peak in XRD spectra. (col. 10, line 67 – col. 10, line 5).

The composition of the prior art of TOPOLKAREV is utilized in making disposable articles, temporary coatings and barriers, films and fibers (ABSTRACT).

Additional components in the prior art of TOPOLKAREV include calcium carbonate, titanium dioxide, talc, kaolin clay and the like (col. 9, lines 49-55), water repellent additives in amount of 1.5 wt % (col. 17, line 36-38). The specification further teaches use of water repellent additives in amount of 0.5-10 wt % (col. 8, lines 10-15). Calcium carbonate and talc can be utilized as nucleating agents in amounts of 0.05-50 wt % (col. 2, lines 26-30). Calcium carbonate in examples is SUPERMITE (col. 10, lines 39-41).

The prior art of TOPOLKAREV discloses a blend of biodegradable polymer and clay wherein clay is utilized in amount of 5-60 wt % and wherein biodegradable polymer is the balance, which is 40-95 wt %. One of the biodegradable polymers in the disclosure of TOPOLKAREV is copolyester.

In the light of the above disclosure it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize the disclosure of TOPOLKAREV with biodegradable polyester and thereby arrive at the present invention, especially when biodegradable polyester is taught and suggested by the disclosure of TOPOLAKREV.

7. Claims 5, 6, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over TOPOLKARAEV (US 6,492,452) in view of HYNKOOK (WO 92/13019).

The discussion of the disclosure of the prior art of TOPOLKARAEV from paragraph 2 or 6 of this office action is incorporated here by reference.

The difference between the present invention and the disclosure of the prior art of TOPOLKARAEV is more specific description of biodegradable polyesters.

With respect to the above difference, the prior art of HYNKOOK discloses biodegradable copolyesters that can also be utilized in making disposable articles, films, fibers or barriers.

The copolyester in examples of the prior art of HYNKOOK comprises at least three components, that include ethylene glycol, diethylene glycol, dimethyl terephthalate and sodium dimethyl s-sulfoisophthalate (Example 4). Most of the examples are similar to this one.

Claims of the prior art of HYNKOOK teaches that at least 85 % of the R groups in the carboxylic acid component is aromatic and 0.1-2.5 contains the sulfo groups (claim 1). The glycol or hydroxy component of copolyester is 2-40 wt %.

The specification further teaches that replacement of terephthalic acid with up to 5 % of aliphatic acid such as azelaic acid, succinic acid, adipic acid and the like (page 6, lines 28-33) can be implemented if one of ordinary skill in the art desires to reduce the Tg value of the copolyester. In addition inclusion of branching component such as triethylene glycol can further lower Tg to even less than 65°C (page 7, line 1).



Modifying the type of the monomers in making of degradable copolyesters can be altered depending on what Tg value is required for the intended use.

In the light of the above disclosure, it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize the copolyester of HYNKOOK in the composition of TOPOLKARAEV and thereby obtain the claimed invention. Using copolyester of HYNKOOK would still result in degradable composition utilized for the same purpose as that in the composition of TOPOLKARAEV.

8. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over TOPOLKARAEV (US 6,492,452) in view of WARZELHAN (US 6,018,004).

The discussion of the disclosure of the prior art of TOPOLKARAEV from paragraph 2 or 6 of this office action is incorporated here by reference.

The difference between the present invention and the disclosure of the prior art of TOPOLKARAEV is recitation of the components of biodegradable polyesters.

With respect to the above difference, the prior art of WARZELHAN discloses degradable polyesters used for producing of molding composition. The copolyester of WARZELHAN comprises following:

Diacid component comprising 35-95 mol% of adipic acid, 5-65 mol % of terephthalic acid, 0-5 mol % of sulfonate compound, and hydroxy component comprising alkane diols (Abstract).

Biodegradable polymers of WARZELHAN are melt processible polymers that can be utilized for form the articles of TOPOLKAREV

In the light of the above disclosure, it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize the copolyester of WARZELHAN in the composition of TOPOLKARAEV and thereby obtain the claimed invention, because copolyesters of WARZELHAN are melt processible.

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over TOPOLKARAEV (US 6,492,452) in view of BRAGODIA (US 6,395,386).

The discussion of the disclosure of the prior art of TOPOLKARAEV from paragraph 5 of this office action is incorporated here by reference.

The difference between the present invention and the disclosure of the prior art of TOPOLKARAEV is the recitation of polymerizing components of the polyester *in situ* with clay.

With respect to the above difference, the prior art of BRAGODIA discloses composition comprising polyester and clay, wherein many monomers utilized in formation of the polyester of BRAGODIA are also listed in TOPOLKARAEV.

The prior art of BRAGODIA teaches that clay can be utilized during the polymerization process of clay. During the polymerization process it is more than obvious to add one monomer to the other and then initiate polycondensation.

Utilizing clay *in situ* with polyester monomers does not adversely affect course of the reaction.

In the light of the above disclosure, it would have been obvious to one having ordinary skill in the art at the time of the instant invention to use clay *in situ* with polyester monomers and

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thereby obtain claimed invention. Such process would not adversely affect the polymerization of the polyester and in fact TOPOLKAREV discloses polymerization step in the specification by addition of grafting monomer.

In the response to the final office action dated 8/9/2004 the applicants argued following:

a) TOPOLKAREV does not disclose any specific composition wherein at least one biodegradable polyester is combined with at least one hydrophobicized phyllosilicate in specific weight percents.

With respect to the above argument, the examiner would like to point out again that the examination of the prior art can not be limited to the specific examples but has to consider the teachings of the prior art as a whole. TOPOLKAREV does teach biodegradable polyesters, and in fact mentions them in several places of the disclosure. TOPOLKAREV also disclosed that PEO resin is used as an example, which does not limit the scope of the disclosure to that specific polymer. Because PEO is utilized as an example, this does not mean that polyester has to be added to it. The examiner's position is that the polyester can be utilized instead of PEO, especially when the examples utilize only one polymer and not polymer blends. By PEO blends, the prior art of TOPOLKAREV refers to the blend of PEO and clay and not PEO and other polymer. The same would be true for polyester.

The specification of TOPOLKAREV as it was stated in the rejection utilizes clay or phyllosilicate that is treated with hydrophobic ammonium compound and the amount of the clay is in a range of 5-60wt %. Therefore, by virtue, regardless which polymer is utilized, its amount would be the balance, which is 40-95 wt %. Therefore the amounts of polymeric components

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are further derived from the teachings of TOPOLKAREV and they do teach the range of the present invention.

At this point the examiner utilized the prior art of TOPOLKAREV also in a 103 rejection. It would also be obvious to utilize polymer that is otherwise taught and disclosed in the prior art of record with the clay.

b) The prior art of TOPOLKAREV can not be utilized as an obviousness rejection since it requires more than mere possibility to make selection from the generic disclosure of a reference with mirrors combination of that teaching with another.

With respect to the above argument, it should be pointed out that independent claims teach in general biodegradable polyester, and the prior art of TOPOLKAREV alone is utilized to reject claim reciting generic or general degradable polyester. Furthermore, it is hardly a mere possibility of combination of polyester and clay in the disclosure of TOPOLKAREV if polyester is clearly taught and suggested as one of the polymers suitable for use. Therefore *prima facie* case is satisfied. Again, the amounts of polymer in the polymer/clay blend are also taught.

c) The teachings of TOPOLKAREV solely refers to an effect, which arises, from combination of modified clay and PEO. It does not teach or imply that such properties would be achieved when utilizing biodegradable polyester..

With respect to the above argument, TOPOLKAREV clearly stated that the PEO compositions are just examples (col. 7, lines 25-26), i.e., it is only an illustration of the invention. TOPOLKAREV also does not exclude other polymers having the same properties either. In fact,

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such polymers, are viewed by the examiner as equivalent and capable of performing the desired function. In addition, presence of filler in general will always change physical properties of the polymeric composition. The prior art of TOPOLKAREV in fact does not have to state any property or any examples in order for this prior art to be applicable against present claims. For the sake of the argument, if clay component exerted certain properties on the PEO, which is biodegradable, moldable polymer, and the blend is processed using extruder, it is very reasonable conclusion, that clay would have impart similar or overlapping properties in another biodegradable and moldable polymer such as polyester, which is also processed using an extruder.

d) The prior art of HYNKOOK and WARZELHAN do not deem to close or even narrow the gap between the teachings of TOPOLKAREV and the present invention.

With respect to the above argument, HYNKOOK and WARZELHAN were utilized against dependent claim therefore they are bridging a gap of dependent claims and not independent. Mainly claims 5, 6, 14 and 15 describe components utilized to make various biodegradable copolyesters. The applicants have not argued why it would not have been obvious to utilize such biodegradable polyester in place of the polyester of TOPOLKAREV

e) The prior art of BRAGODIA is not deemed as one that meets the criteria of analogous art.

With respect to the above argument, although the applicants are pursuing better mechanical properties, claim 9, which is rejected by the prior art of BRAGODIA comprises limitation of *in-situ* polymerization of cop-polyester components and clay. It is a therefore a

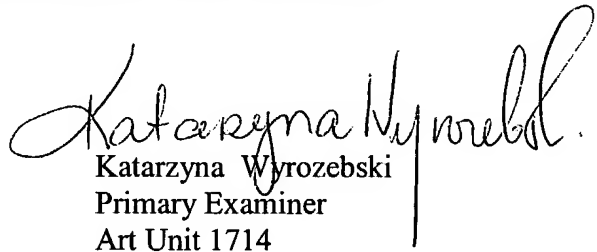
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process limitation, which is shown in the disclosure of BRAGODIA. One of ordinary skill in the art would have to know such teachings in order to arrive at the present invention. Therefore, the prior art of BRAGODIA is analogous to claim 9.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski whose telephone number is (571) 272-1127. The examiner can normally be reached on Mon-Thurs 6:30 AM-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Katarzyna Wyrozebski  
Primary Examiner  
Art Unit 1714

October 6, 2004